AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A process for preparing a patterned layer of aligned carbon nanotubes on a substrate including:

applying a pattern of polymeric material to the surface of a substrate capable of supporting nanotube growth using a soft-lithographic technique;

subjecting said polymeric material to carbonization to form a patterned layer of carbonized polymer on the surface of the substrate; ~~or~~ and

synthesising a layer of aligned carbon nanotubes on regions of said substrate to which carbonised polymer is not attached to provide a patterned layer of aligned carbon nanotubes on said substrate.

2. (original): A process according to claim 1 wherein the polymeric material is a photoresist or photoresponsive material.

3. (currently amended): The process according to claim 2 wherein the polymeric material is (DNQ)-modified cresol novolac resin ~~or Ozatek PL 14 (from Hoechst)~~.

4. (original): A process according to claim 1 wherein the polymeric material is selected from the group consisting of epoxy resins, PEO, polyanilines, polymethyl methacrylate, polystyrenes, polydienes, and plasma polymers derived from saturated or unsaturated alcohols, ketones, aldehydes, amines or amides.

5. (original): A process according to claim 1 where the substrate is a glass.

6. (original): A process according to claim 1 wherein the substrate is selected from the group consisting of quartz glass, graphite, mica, mesaporous silica, silicon wafer, nanoporous alumina and ceramic plates.

7. (original): The process according to claim 6 wherein the substrate is quartz glass or silicon wafer.

8. (original): The process according to claim 1 wherein the substrate comprises a coating of a material which is capable of supporting carbon nanotube growth under the conditions employed.

9. (currently amended): The process according to claim 8 wherein the coating is selected from the group consisting of a metal, and metal alloys ~~or~~ and compounds thereof having ~~conducing~~ conducting or semiconducting properties.

10. (original): The process according to claim 9 wherein the coating is a metal selected from the group consisting of Au, Pt, Cu, Cr, Ni, Fe, Co and Pd.

11. (currently amended): The process according to claim 9 wherein the coating is a metal compound or metal alloy compound selected from an oxide, a carbide, a nitride, a sulfide ~~or~~ and a boride.

12. (original): The process according to claim 11 wherein the coating is a metal oxide selected from the group consisting of indium tin oxide (ITO), $A1_2O_3$, TiO_2 and MgO.

13. (original): The process according to claim 9 wherein the coating is a semiconducting material selected from the group consisting of gallium arsenide, aluminium arsenide, aluminium sulphide and gallium sulphide.

14. (original): A process according to claim 1 wherein the soft lithographic technique is a microcontact printing technique.

15. (currently amended): A process according to claim 14 wherein self-assembling monolayers (SAMS) of a molecular ink is applied to the surface of said substrate in a region specific manner, followed by adsorption of said polymeric material in the SAM-free regions~~)~~.

16. (original): A process according to claim 15 wherein the molecular ink is an alkylsiloxane.

17. (original): A process according to claim 15 wherein the molecular ink is applied using a stamp.

18. (original): A process according to claim 14 wherein the hydrophobicity and hydrophilicity of the surface of said substrate is altered by the region specific transfer to the surface of the substrate of a material which alters the hydrophobicity or hydropbiliclty of the surface, followed by the adsorption of the polymer in the more hydrophobic regions of the substrate surface.

19. (original): A process according to claim 1 wherein the soft lithographic technique is a micromolding technique.

20. (currently amended): A process according to claim 19 wherein the micromolding technique comprises applying a thin layer of a solution of said polymeric material in a solvent to said substrate surface, sandwiching the solution between said substrate surface and a mold surface, said mold surface having incised areas corresponding to the pattern to be formed on the substrate surface, allowing the solvent to evaporate and removing the mold to provide a pattern of polymeric material on the substrate surface.

21. (original): A process according to claim 20 wherein the mold is composed of PDMS, fluorocarbon or other solvent resistant elastomers.

22. (original): A process according to claim 1 wherein the polymeric material is carbonized by heating to a temperature at or above a temperature at which said polymeric material decomposes.

23. (original): The process according to claim 1 wherein the aligned carbon nanotubes are synthesised by pyrolysis of a carbon-containing material in the presence of a suitable catalyst for nanotube formation.

24. (currently amended): The process according to claim 23 wherein the carbon-containing material is selected from the group consisting of alkanes, alkenes, alkynes ~~or~~ and aromatic hydrocarbons and ~~their~~ derivatives thereof, organometailic compounds of transition metals and other suitable evaporable metal complexes.

25. (currently amended): The process according to claim 24 wherein the carbon-containing material is selected from the group consisting of methane, acetylene and benzene.

26. (original): The process according to claim 24 wherein the organometallic compound is a transition metal phthalocyanine.

27. (original): The process according to claim 24 wherein the organometallic compound is a metallocene.

28. (original): The process according to claim 23 wherein the catalyst is a transition metal.

29. (currently amended): The process according to claim 28 wherein the transition metal is selected from the group consisting of Fe, Co, Al, Ni, Mn, Pd, Cr ~~or~~ and alloys thereof in any suitable oxidation state.

30. (original): The process according to claim 23 wherein the catalyst is incorporated in the carbon-containing material.

31. (currently amended): The process according to claim 30 wherein the catalyst is selected from the group consisting of Fe) (II) phthalocyanine, Ni(II) phthalocyanine and ferrocene.

32. (original): The process according to claim 30 further comprising an additional source of catalyst.

33. (original): The process according to claim 30 further comprising an additional source of carbon-containing material.

34. (original): The process according to claim 23 wherein the pyrolysis is carried out at 500°C to 1100°C.

35. (currently amended): The process according to claim 1 wherein the process comprises ~~the~~ a further step of dissociating the aligned carbon nanotubes from the substrate.

36. (original): The process according to claim 35 wherein the substrate is quartz glass and dissociation is effected by immersing the sample in an aqueous hydrofluoric acid solution (10-40% w/w).

37. (original): The process according to claim 35 wherein dissociation comprises transferring he patterned carbon nanotube layer to another substrate.

38. (currently amended): The process according to claim 37 wherein the other substrate is elected from the group consisting of another substrate capable of supporting carbon nanotube growth, a metal, a metal oxide, a semi-conductor material ~~or~~ and a polymer.

39. (original): The process according to claim 38 wherein the polymer is selected from the group consisting of adhesive coated polymers, conjugated (conducting) polymers, temperature/pressure responsive polymers, bioactive polymers and engineering resins.

40. (original): The process according to claim 39 wherein the adhesive coated polymer is cellulose.

41-43. (canceled).